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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/802,791      | 03/08/2001  | Nicholas F. Borrelli | SP00-139            | 8335             |

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| EXAMINER |
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KAO, CHIH CHENG G

| ART UNIT | PAPER NUMBER |
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2882

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/802,791

Applicant(s)

BORRELLI ET AL.

Examiner

Chih-Cheng Glen Kao

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/30/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 13 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7/22/02
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US Patent 5545595) in view of Borrelli et al. (US Patent 5483628) and Auzel et al. (US Patent 5858891).

2. With regards to claim 1, Wang et al. discloses a glass-ceramic rare earth doped fiber (Title and col. 1, lines 20-59, and col. 2, lines 1-10) having crystallites (Abstract) and dopant (Abstract).

However, Wang et al. does not seem to specifically disclose a fluoride glass ceramic fiber with at least 90% dopant situated within crystallites.

Borrelli et al. teaches a fluoride glass ceramic fiber (col. 1, lines 5-10). Auzel et al. teaches at least 100% dopant situated within crystallites (Abstract, lines 4-5, and col. 2, lines 49-51)

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the fiber of Borrelli et al with the device of Wang et al., since one would be motivated to incorporate this for lasers as shown by Borrelli et al. (col. 1, lines 5-10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have at least 100% of dopant of Auzel et al. with the suggested device of Wang et al. in view of Borrelli et al., since one would be motivated to include the dopant in the glass-ceramic fiber core for high effective sections and good quantum efficiencies as shown by Auzel et al. (col. 1, lines 10-16) when a signal is transmitted through. Also note that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

3. With regards to claims 2 and 3, Wang et al. further discloses crystallites smaller than 1000nm or 100nm (Page 3268, col. 2, last 7 lines).

4. With regards to claim 4, Wang et al. in view of Borrelli et al. and Auzel et al. suggests a device as recited above.

However, Wang et al. does not disclose crystallites smaller than 10nm.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have crystallites smaller than 10nm with the device of Wang et al. in view of Borrelli et al. and Auzel et al., since where in the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would be motivated to have the crystals less than 10nm in order to exhibit the required optical transparency, which is most appropriate for laser and optical amplification applications as shown by Auzel et al. (col. 2, lines 37-40) instead of larger crystals, which will

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cause optical scattering which is unsuitable for a laser as shown by Auzel et al. (col. 1, lines 47-50).

5. With regards to claim 5, Wang et al. further discloses emission and absorption lines narrower than a precursor rare earth doped glass (inherent and Figs. 1a-2b). Also note the claiming of an unknown property, which is inherently present in the prior art, does not necessarily make the claim patentable.

6. With regards to claim 6, Wang et al. in view of Borrelli et al. and Auzel et al. suggests a device as recited above. Wang et al. further discloses the dopant as Pr, Er, Nd, Tm, or Dy, (Table I) with a certain level (Claim 1).

However, Wang et al. does not specifically disclose the dopant level greater than 100ppm.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the dopant level greater than 100ppm with the device of Wang et al. in view of Borrelli et al. and Auzel et al., since where in the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would be motivated to incorporate increased dopant levels for high efficiency wavelength up-conversion as implied from Wang et al. (col. 2, lines 1-36).

7. Claims 7-12, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. in view of Borrelli et al., Auzel et al., and Ainslie et al. (US Patent 4936650).

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For purposes of being concise, Wang et al. in view of Borrelli et al. and Auzel et al. suggests a device as recited above. Also note that gain in at least 1320 to 1360 nm is inherent.

However, Wang et al. does not seem to specifically disclose an optical amplifier with an input, a length of fiber coupled to the input and optical pump, an output, and an optical component between the input and output.

Ainslie et al. discloses an optical amplifier (Abstract, lines 1-2) comprising an input (Fig. 3, #33), a length of fiber coupled to the input (Fig. 3, #30) and optical pump (Fig. 3, #34), an output (Fig. 3, #35), and an optical component between the input and output (Fig. 3, #37).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the optical amplifier of Ainslie et al with the device of Wang et al. in view of Borrelli et al. and Auzel et al., since one would be motivated to incorporate this for its importance in telecommunications as implied from Ainslie et al. (col. 1, lines 12-16).

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. in view of Borrelli et al., Auzel et al., and Ainslie et al. as applied to claim 7 above, and further in view of Arima (US Patent 6217204).

Wang et al. in view of Borrelli et al., Auzel et al., and Ainslie et al. suggests a device as recited above.

However, Wang et al. does not disclose a filter.

Arima teaches a filter (Fig. 1, #10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the filter of Arima with the suggested device of Wang et al. in view

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of Borrelli et al., Auzel et al., and Ainslie et al., since one would be motivated to have the filter to reduce noise as shown by Arima (col. 1, lines 61-67).

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. in view of Borrelli et al., Auzel et al., and Ainslie et al. as applied to claim 7 above, and further in view of further in view of Samson et al. (WO 98/02388).

Wang et al. in view of Borrelli et al., Auzel et al., and Ainslie et al. suggests a device as recited above.

However, Wang et al. does not disclose a shift in ESA from 1320 to 1360 nm.

Samson et al. teaches ESA shifting (Page 3, lines 1-5).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the shifting of Samson et al. with the suggested device of Wang et al. in view of Borrelli et al., Auzel et al., and Ainslie et al., since one would be motivated to shift ESA to avoid compromising on efficiency as implied from Samson et al. (Page 1, lines 10-11).

Secondly, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to have shift from 1320 to 1360 nm with the suggested device of Wang et al. in view of Borrelli et al., Auzel et al., Ainslie et al., and Samson et al., since finding the optimum or workable range involves only routine skill in the art. Again, one would be motivated to shift ESA to avoid compromising on efficiency as implied from Samson et al. (Page 1, lines 10-11).

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***Response to Arguments***

10. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Further with regards to Samson et al., glass-ceramic and glass material are considered art-recognized equivalents in that they are both the transparent material base for transmitting light through fibers. Although Samson et al. may not seem to specifically disclose "glass-ceramic" material, it would have been within routine skill in the art to substitute one type of material for the other. The shift in ESA spectrum is related to the dopant (Page 3, lines 1-5), not the base material. Thus, it would have been obvious to have shifts in either glass or glass-ceramic materials with a rare-earth ion dopant such as  $\text{Nd}^{3+}$  (Page 3, lines 1-7).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk  
8/22/03



DAVID V. BRUCE  
PRIMARY EXAMINER